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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/677,058

09/30/2003

Ernest Tsui

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21186 7590 05/17/2007  
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EXAMINER
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FILE, ERIN M

ART UNIT	PAPER NUMBER
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2611

MAIL DATE	DELIVERY MODE
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05/17/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/677,058

Applicant(s)

TSUI ET AL.

Examiner

Erin M. File

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 4-7, 10, 11, 14-19, 22, and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Kawanabe (U.S. Patent No. 7,054,397).

**Claims 1, 12**, Kawanabe discloses:

- shifting a center frequency of selected ones of a plurality of received signals by selected amounts to provide a plurality of shifted signals located in a frequency domain (fig. 2, antennas 107-1..n receive a plurality of signals which are frequency shifted by 111, col. 4, lines 46-48)
- combining the plurality of shifted signals into a composite signal centered at a selected frequency (fig. 2, 115, col. 4, lines 49-53).

**Claim 2, 4**, Kawanabe further discloses converting the composite signal into a plurality of digital signals (fig. 5, A/D converter 161 outputs a plurality of digital signals to signal processing portion 123).

**Claim 5**, Kawanabe further discloses providing the multiplicity of digital samples to a

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plurality of digital bandpass filters (col. 5, lines 39-42).

**Claim 6**, Kawanabe further discloses providing the series of digital channel samples to a down converter (col. 2, line 17).

**Claim 7**, Kawanabe further discloses wherein the plurality of received signals comprises a plurality of baseband analog signals (col. 8, line 61).

**Claims 10, 16**, Kawanabe further discloses the plurality of shifted signals are located substantially sequentially in the frequency domain (col. 7, lines 37-43).

**Claims 11, 17**, Kawanabe discloses the selected frequency is approximately zero cycles-per-second (see fig. 6A and 6B show the frequency of the combined signal centered at zero).

**Claim 14**, Kawanabe further discloses the composite signal includes a plurality of signals from a plurality of antennas (fig. 2, antennas 107-1..n receive a plurality of signals)

**Claim 15**, Kawanabe discloses selecting a single sampling frequency rate for the composite signal and determining a down conversion frequency for selected radio frequency signals associated with the plurality of received signals (col. 9, line 12).

**Claim 18, 24**, Lin discloses:

- an analog-to-digital converter to receive a composite signal (fig. 5, 161);
- an analog stage to couple to the analog-to-digital converter, wherein the analog stage is to shift a center frequency of a plurality of received signals by a selected amount to provide a plurality of shifted signals for combination into the composite

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signal (fig. 2, antennas 107-1..n receive a plurality of signals which are frequency shifted by 111, and combined by 115, col. 4, lines 46-53)

- an omnidirectional antenna to couple to the analog stage (fig. 2, antennas 107-1..n).

**Claims 19, 22**, Kawanabe further discloses a plurality of sections corresponding to the plurality of received signals, wherein selected ones of the sections include at least one bandpass filter and a mixer (fig. 5, 145, 149, col. 5, lines 39-42)

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3, 8, 9, 21, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawanabe (U.S. Patent No. 7,054,397) as applied to claims 1, 2, 18, 24 are above, and further in view of Li et al. (U.S. Patent No. 6,639,551).

**Claims 3, 8, 21, 25**, Kawanabe fails to disclose receiving the plurality of digital signals at an interference canceller, however, Li discloses an interference canceller for a plurality of digital signals (col. 2, line 58-col. 3, line 12). Because interference cancellation has the well known advantage of increasing signal quality and reliability, it would have been obvious to one skilled in the art at the time of invention to incorporate the interference cancellation as disclosed by Li into the invention of Kawanabe.

**Claim 9**, Li further discloses canceling the interference present in the composite signal further comprises: reconstructing the interference present in the composite signal (col. 2, line 58-col. 3, line 12).

5. Claims 13 and 27 rejected under 35 U.S.C. 103(a) as being unpatentable over Kawanabe (U.S. Patent No. 7,054,397) as applied to claims 12 and 26 above, and further in view of Fernandes (U.S. Patent No. 5,490,134).

**Claims 13, 27**, Kawanabe fails to disclose the composite signal includes a plurality of protocols associated with the plurality of received signals, however, Fernandes discloses the composite signal includes a plurality of protocols associated with the plurality of received signals (col. 1, 38-40). Because Fernandes discloses that allowing the reception of a composite signal with multiple protocols has the advantage of backward compatibility with new technologies (col. 1, lines 14-20), it would have been obvious to one skilled in the art at the time of invention to incorporate the multiple protocol combined signal as disclosed by Fernandes into the invention of Kawanabe.

6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawanabe (U.S. Patent No. 7,054,397) as applied to claim 18 above, and further in view of Lin et al. (U.S. Patent No. 6,175,327).

**Claim 20**, Kawanabe fails to disclose the analog stage further comprises: a combiner selected from a power combiner, a mixer, and an adder, however, Lin discloses a signal combiner which is a power combiner (fig. 1, 28). Lin further discloses that the power

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combination as disclosed in his invention has the advantage of reducing interference in the received signal (col. 3, lines 17-28), it would have been obvious to one skilled in the art at the time of invention to incorporate the power combiner as disclosed by Lin into the invention of Kawanabe.

7. Claims 23, 26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawanabe (U.S. Patent No. 7,054,397) as applied to claim 18 and 24 above, and further in view of Casabona et al (U.S. Patent No. 5,782,540).

**Claims 23, 26**, Lin fails to disclose an active channel controller to adjust a sampling rate associated with the analog-to-digital converter, however, Casabona discloses an active channel controller to adjust a sampling rate associated with the analog-to-digital converter (col. 15, lines 13-14). Because the capability of adjusting the sampling rate increases the accuracy and efficiency of the receiver, it would have been obvious to one skilled in the art at the time of invention to incorporate the sampling rate adjustment as disclosed by Casabona into the invention of Kawanabe.

**Claim 28**, Casabona further discloses the active channel controller is to determine a down conversion frequency according to an activity status of a selected section included in a plurality of sections corresponding to the plurality of received signals (col. 15, lines 13-14).

***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1, 12, recites the limitation "a selected frequency" in lines 6, 7. There is insufficient antecedent basis for this limitation in the claim.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. File whose telephone number is 5712726040. The examiner can normally be reached on M-F 1-9:30PM.

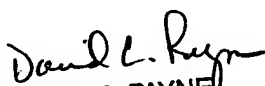
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 5712723024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Erin M. File



5/11/2007

  
DAVID C. PAYNE  
SUPERVISORY PATENT EXAMINER